THE

VETERINARY JOURNAL

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Editorials.

RABIES.

A NUMBER of dogs in Devon and Cornwall have been destroyed as rabid, or suspected of rabies. Previous to the present outbreak Great Britain had been free from the disease since 1903. Of all complaints human beings may suffer from perhaps rabies and tetanus may most nearly be described as transmitting the pains of hell to patients whilst on earth. Fortunately the percentage of persons bitten who recover after undergoing the Pasteur treatment is high, and the mortality from rabies is much more under control than that from tetanus. More persons die from bites inflicted on the head and face than where the teeth of the dog have passed through the clothes before penetrating the human flesh. From 1866 to 1908, 31,759 persons were treated by vaccination against rabies at the Pasteur Institute in Paris, and of these 129, or ·41 per cent., died. So it may be seen that the chances of recovery after being bitten are very, very hopeful.

Up to the present it has always been necessary for patients in this country to travel to Paris for treatment. This necessitated delay and the inconvenience and trouble of a longish journey and a sojourn among strangers for a time. In pre-war days quite a cosmopolitan crowd frequently assembled at the Institute. Greeks, Algerians, Moors, and many other nationalities might be seen there, and the accommodation near the establishment for patients was not always to a Britisher's taste.

Recently a very useful leaflet on the matter of rabies has been issued by the Local Government Board, Whitehall, S.W.1. Its title is: "Memorandum on the Procedure recommended to be followed

in the event of Persons being bitten by Dogs suspected or ascertained to be Rabid." One great advantage announced by the leaflet is that anti-rabic treatment may now be given at Plymouth, the material for which is specially supplied from the Pasteur Institute in Paris. Dr. W. L. Pethybridge, the pathologist of the South Devon and East Cornwall Hospital, directs and supervises the work. His address is 11, Whitefield Terrace, Plymouth. Poor persons who cannot afford the expense of treatment may have their needs provided for by the District Council in their area. In another part of this issue we give a full reproduction of the leaflet, and we specially recommend all our readers to peruse it. Whilst on the subject, it may be as well to mention that the Board of Agriculture and Fisheries has recently called the attention of veterinary surgeons to the probability of some dogs being smuggled into the country during demobilisation, and requesting us to bear this in mind in the course of our daily practice.

Provision for the quarantining of dogs is important in connection with the matter. Varied opinions exist as to whether this period should be for three or six months, but real safety seems to point to the latter length of time. G. M.

HORSES.

EVERYWHERE there are dismal Jimmies who prophesy that the days of the horse are numbered. The veterinary surgeon is constantly knocking up against them. Unless he has time to think, in a weak moment he is apt to acquiesce. He should be able to keep his end up and make a good argumentative fight on the matter. The love of horses is innate in the heart of a big crowd of Britishers. From their cradles to their graves they talk about them. They commence life clamouring for a gee-gee and a whip, and babble in their dotage of the great feats or pleasant manners of some equine favourites they have known or possessed. Their achievements and special work can never be replaced by the aeroplane or motor car.

In war we think they will always be needed. The defeat of the Germans was in a measure due to their lack of horses. Just before the commencement of the conflict they purchased half a million horses to add to their huge stock, and it was the irony of fate that gave them 300,000 from France. As the fight went on their sources of supply were closed to them and their shortage of horses caused much of the heavy artillery to fall into the hands of the allied armies when the combined advance under Marshal Foch began.

About 5½ million horses have been employed on the Western front, and two millions of these belonged to Great Britain. The collapse of Bulgaria, the victories in Palestine and the safety of the armies in

Italy have all been largely due to good cavalry work. The keeping of the horses fit has enabled the R.A.V.C. to gain a fresh laurel wreath. No cavilling critic can find fault when a total of 1,424,000 have been discharged cured, out of a total of 1,850,000 horses treated from the commencement of the war to February, 1918. In agricultural work, in dray work in and about the town, on the racecourse and in the hunting field, the horse stands as good a chance of surviving as mankind itself. What humour and what sentiment would be missed from life if the horse became extinct.

It is reported that a gallant colonel of Volunteers was once riding a horse hired from the local carriage company. The guard of a passing tram rang his bell and the charger suddenly stopped. The gallant colonel threatened to use his ornamental spurs as the serried ranks of the British army went marching into him. Then the trams car driver providentially rang his bell again, and the situation was saved, and hubbub and confusion were followed by peace, perfect peace. When black horses get white with foam at a funeral, old coachmen will tell you that "if 'earse 'osses were in a muck sweat as if pumpt on, it showed th' corpse 'ad 'ad too much brass or done summut wrong." Those "thrutcht out wi' brass" must have been a little unscrupulous, and horses soon find this out and have great difficulty in dragging such to Church, deeming them unfit for Christian burial. The moral is that all wealthy folk ought to be cremated.

Horses are said to be able to see spirits or boggarts better than men. The horse is a noble animal and it hasn't always a most pernicious influence upon everyone connected with it.

A smart dealer was once trying to sell a broken-winded horse to an equally smart purchaser. The seller kept calling attention to the glossiness and brilliancy of the horse's coat. Finally the solicited buyer said, "Oh, aye, aye, his coat is a fine one, but I'm hanged if I care for his pants."

All down the ages grand work has been done by the horse; and humour, sentiment, interest and attractive roguery have ever been associated with him. May he and his race long remain with us.

G. M.

MEMORANDUM ON THE PROCEDURE RECOMMENDED TO BE FOLLOWED IN THE EVENT OF PERSONS BEING BITTEN BY DOGS SUSPECTED OR ASCERTAINED TO BE RABID.

[*Revised December*, 1918.

1. When persons are bitten by dogs in areas in which rabies in dogs is suspected, the wound should be treated as soon as possible with undiluted carbolic acid, or with undiluted Izal or similar disin-

fectant. The disinfectant should be allowed to come into contact with all parts of the wound, and should then be washed out with water or dilute disinfectant. If no disinfectant of the kind is available, the wound should be thoroughly washed and irrigated with hot or cold water.

2. If the dog is pronounced on competent veterinary authority to have had rabies, the person bitten should be urged to secure specific anti-rabic treatment as soon as possible, no matter what local treatment has been applied to the bite.

3. Specific anti-rabic treatment can be given at Plymouth with material which is specially supplied for the purpose by the Director of the Pasteur Institute in Paris. The Local Government Board have arranged for this treatment to be undertaken by Dr. W. L. Pethybridge, pathologist of the South Devon Hospital. In ordinary circumstances this should render unnecessary the arrangements for sending persons bitten to Paris which were set out in the Board's previous Memorandum of October 30th, 1918.

4. By arrangement with the Board of Agriculture and Fisheries the names of all persons known to officers of that Department or to the police to have been bitten by dogs suspected of being rabid will be communicated at once to the Medical Officer of Health of the district in which the bitten persons live.

5. As soon as information reaches the Medical Officer of Health that a person in his district has been bitten by a dog suspected of being rabid, the facts of the case should at once be reported to the Medical Officer of the Local Government Board with the following particulars :—

(*a*) Name, age and address of the person bitten ;
(*b*) Date when bitten ;
(*c*) Severity of the bite and part of the body bitten ;
(*d*) Name and address of owner of the dog, or other information which will enable the dog to be identified.
(*e*) Whether rabies in the dog has been diagnosed locally.

6. The person bitten should be informed that the matter is under inquiry and that he should be prepared, if so advised, to go to Plymouth for anti-rabic treatment on receipt of a telegram.

7. On receipt of information from the Medical Officer of Health the Local Government Board will ascertain the opinion of the Veterinary Officers of the Board of Agriculture and Fisheries on the facts in their possession regarding the suspected dog, and the Board will inform the Medical Officer of Health if the Veterinary Officers advise that the dog is to be regarded as rabid. Should it happen, for reasons which are unavoidable, that a definite diagnosis cannot be furnished without

delay, the Board of Agriculture have undertaken to advise the Local Government Board whether the symptoms in the dog are sufficiently suspicious to justify anti-rabic treatment before the confirmatory diagnosis is available, and this information will similarly be forwarded to the Medical Officer of Health.

8. When, after communicating with the Board as above, the Medical Officer of Health is satisfied that anti rabic treatment is essential, and has ascertained that the person bitten is prepared to begin the treatment, he should communicate with Dr. Pethybridge at 11, Whitefield Terrace, Plymouth, stating whether the place and date of the patient's first attendance for treatment are to be telegraphed to himself or to the patient direct.

9. In any case where the Medical Officer of Health ascertains that a person who needs anti-rabic treatment cannot stay at Plymouth at his own expense for the two or three weeks necessary for the completion of the course, he should at once represent the matter to the District Council or to the Chairman of the Council in order that the funds required may be provided by the Council. The Local Government Board, as previously announced, are prepared to sanction reasonable expenditure incurred by the Council for this purpose.

10. Attention may again be drawn to the importance of securing all possible expedition in the above procedure.

N.B.—A copy of this Memorandum has been forwarded to the Medical Officer of Health.

Local Government Board, 31st December, 1918.

Original Communications.

THE WORK OF THE BRITISH ARMY VETERINARY CORPS AT THE FRONTS.

By Major-General Sir FREDERICK SMITH, K.C.M.G., C.B., F.R.C.V.S.

Continued from page 16.

PART II.

What I have now described to you is the first procedure in dealing with sick animals in the front line. The second step is as follows:

When a mobile veterinary section clears out its sick, they are handed over to a formation known as a *Veterinary Evacuation Station*. This is not a divisional unit, but belongs to the corps of which the division forms part. Each corps has one evacuating station, charged with the duty of receiving the sick from all the mobile veterinary sections, and transmitting them to the base veterinary hospitals. These evacuating stations are fixtures, and located near to corps railhead, close to a water-supply and main road, and, if possible, shelter

is provided by tents or in billets. The stations fly the usual distinguishing flag, while notice-boards and finger-posts at cross-roads indicate its locality; its position is also published in corps orders.

Every animal forwarded to an evacuating station appears on a roll furnished by the mobile section; this gives the information contained on the coloured label previously spoken of. Labels get lost, and are very often eaten by neighbouring animals; in fact, the problem of field marking for the purpose of identification is not entirely solved at the present time, though more or less ingenious devices have been employed.

The sick in the evacuating stations are capable of being more thoroughly and deliberately inspected than is often possible in a mobile veterinary section; the diagnosis is again checked, and a rigid search made for contagious and infectious diseases, as it is most important that they should not escape undetected from any army area. So important is this that a certificate has to be rendered to corps headquarters specifying that each animal admitted to the evacuating station has been inspected and the result stated. This inspection is a part of the sifting which began in the mobile section and only terminates, as we shall see, when the animal is again fit for duty. It is the essence of veterinary supervision, and nothing can replace it. Every case passing through an evacuating station, together with its disposal, is entered in a book, and from this totals are supplied at the end of the week to the corps headquarters concerned.

The sick are sent to the base by the evacuating stations two or three times a week, empty supply trains being utilised, or a special sick horse train made up. A train load is usually 280 horses, carried in thirty-five trucks. On no account is the evacuating station allowed to become congested, or its functions are impaired, and above all there is a delay in getting the more serious cases under treatment. In some places evacuation may be carried out by water transport, and if the distance is not considerable suitable cases may march by road. Prior to evacuation all surgical cases are dressed, and first-aid dressings accompany the party. The surgical and medical cases travel in their groups, and the contagious cases travel in trucks on which is marked the instruction "To be disinfected." One attendant is told off to every two trucks; forage and a good supply of drinking water accompany the animals; every evacuating station holds on charge large water bags for this purpose. Petrol tins and cartridge containers were at one time employed on these trains, and were found most useful for carrying water. Each evacuating station possesses a motor ambulance, the majority of these being gifts. On all hands one hears of the enormous value of the ambulance service in the

present war, especially in France, where it has received its full development ; some hundreds are employed, no fewer than twenty-eight being motor ambulances, each capable of taking two horses.

The evacuating station having entrained its sick for the base, the operation of the second piece of machinery in the scheme comes to an end, and the third takes up the work. These are the hospitals found at, or in the locality of, the various bases established for the armies, one group of hospitals being told off for a definite portion of the fighting line. A group consists of two, three or more hospitals, *i.e.* a *Reception Hospital*, a *General Hospital*, and a *Mange Hospital*.

When the train arrives at the *Reception Hospital* the cases are taken to the admission section, where the serial numbers, description, and diseases are verified. Here they are marked for retention, transfer, or disposal, after being grouped into surgical, medical, contagious diseases, and mange, etc. The reception hospitals retain nothing excepting very serious or slight cases—the one being unfit to be moved, and the others likely to be so short a time under treatment that it is economical to hold them. These reception hospitals have to be prepared to deal with two or three days' admissions, and are generally for 500 to 750 cases. During their stay in the reception hospital, the animals are tested to ascertain whether they are free from glanders, so that forty-eight hours is spent here ; this time is occupied in grouping the sick and attending to their immediate requirements. All animals that pass the test for glanders can now be disposed of by transfer to the other branches of the base hospital system. This is carried out by the *Transfer* section of the reception hospital, which takes over the various surgical, medical and mange groups. From these groups cases are drafted to the general and mange hospitals in any number desired, the available accommodation at each hospital being previously known.

The *Disposal* section of the reception hospital deals with the cases for destruction or sale, the latter being handed over to the Remount Department.

A " treatment card " for each patient accompanies it wherever it goes, so that any change in diagnosis, or the development of a new disease may be noted. The card explains what the patient is unable to express, and is also a complete record of the animal while under treatment ; further, it indicates how long any case has been in hospital, for there is a time limit, generally placed at three months, beyond which it is not economical to retain an animal.

We must now look at the *General Hospital*.

These are designed for 2,000 cases, and are generally divided into eight sections or sub-divisions, each being told off for a certain class

of case—for example, lameness, surgical foot cases, other surgical cases, pneumonia and catarrh, debility, contagious diseases other than mange, etc. No case of mange is admitted to a general hospital; should one occur, it is transferred to a mange hospital. On arrival at a general hospital the cases are verified from their treatment cards, and posted to their proper wards. It is evident that the experience gained by officers in their special class of case is unique, and their expert opinion of the utmost value to the patient.

As an animal in any of the hospital wards becomes convalescent, it is told off to a definite portion of its own ward for special feeding and exercise, with the object of getting it fit for work, and twice a week the cured cases in each ward are sent to the *Discharge* section of the hospital. Here the animal receives an increase in food and exercise, and when quite fit for work is again tested for glanders; if passed free it is transferred to the nearest remount depot for issue to the troops.

Cases of debility take a long time to recover, and for these special *Convalescent* depots exist, where the animals during the day are at liberty in the open, and housed at night. Some of these convalescent depots occupy a large tract of country, one of nearly 3,000 acres was the first chosen, and held 4,000 animals. The large majority of these during the summer are left out day and night, only the weaker animals being housed. During the winter the numbers in a depot are reduced, and all the animals housed. The principle of construction employed in these depots is to have a series of well-fenced enclosures, each with its own open buildings and water-supply, with facilities for inspection, exercise, watering, and feeding; each group has its own exercising ground. The object of this system of separation is to prevent extension of contagious diseases should any appear, and to ensure this further each group is subdivided into smaller groups of fifty horses, which not only gives additional isolation, but secures individual attention. It is very easy to overlook a case in a mob of 1,000 animals; it is practically impossible when the group is reduced to fifty.

You may perhaps be surprised at the care which is paid to the isolation of the horses into small groups, but you will remember that the animals in these convalescent depots are allowed their freedom, and in consequence mix with each other. The horse is the most sociable of animals when with his fellows; he has his friends whom he nibbles and rubs against, and also his enemies whom, if he is the weaker, he avoids. In spite of the series of systematic inspections which have been carried out before he gains admission to a convalescent depot, he may nevertheless be harbouring infectious disease in

a hidden form, which later becoming manifest will certainly infect the other animals in the group. Should such case occur the risk of infection is reduced to relatively unimportant numbers by the system of small groups. In this way infection of convalescent depots is prevented or controlled. The rule, however, for preventing infection is that no animals are sent there excepting those requiring rest, owing to debility and exhaustion; no case of disease, and nothing requiring active treatment is ever knowingly admitted.

On arrival at a convalescent depot each animal is carefully examined in order to see that it fulfils the required conditions; those refused admission are returned to their hospitals. The serial numbers are verified, hind shoes removed to prevent damage from kicking, and the whole party remains in isolation for fourteen days, during which time it is given the full benefit of the depot system of nursing. At the end of this period the animals are passed out of the isolation block, and classified according to condition and strength; the weaker ones being kept together, which not only ensures the necessary quietude and rest, but a better distribution of food, for the strong horse will always rob the weak. Horses are very human in some of their characteristics. The diet is most carefully regulated, for an exhausted horse cannot digest whole or raw grain.

As the animals improve in condition they are gradually promoted to the block dealing with those being got ready for discharge; here their feeding is more liberal, and the exercise increased. From this group animals are selected once or twice a week for issue to remount depots, all being tested for glanders before being sent away.

These convalescent depots are organised on the principle that horses at liberty can do a great deal for themselves where proper arrangements exist; for instance, the exercise is carried out on a large semi-circular track which communicates with each enclosure, also that the fifty horses are exercised together, not by being ridden, but by trotting or cantering around with no weight on their backs, as you will presently see on the screen. The pace is regulated by one or two mounted men. Having completed their exercise, the fifty are returned to their own enclosure and the next batch taken out. It will be obvious to you what a saving in labour is effected by such a system.

There is no part of the method of restoring war-worn animals which requires a more thorough and perfect system than convalescent depots. Neglect of this in previous campaigns has been productive of enormous losses by the spread of disease. Not the least of the triumphs of the Veterinary Service in war has been its organisation and management of convalescent depots.

Mange Hospitals, as their name implies, are distinct institutions for the treatment of the highly contagious disease known as mange. It may or may not be known to you that mange is due to a special variety of insect or mite, of which there are two serious types in the horse. One lives on the surface, the other in the depth of the skin. The disease caused by the latter is infinitely more difficult to cure.

In the organisation of a mange hospital the group system is, as usual, adopted. The animals on admission are first classified according to whether they are suffering from the ravages of the surface parasite, or that of the deep-seated one. They are next grouped according to order of severity, all cases of equal intensity being kept together.

The first important point to decide on admission is the type of disease. This is settled by the use of the microscope. Every case has to go through this routine, and as diagnosed it is sent to its proper ward. If, in addition to mange, the animal is suffering from surgical trouble or other form of disease, it is grouped accordingly, so that the two distinct conditions may be simultaneously dealt with.

The routine treatment of mange may interest you. The cases are first clipped, either by hand or power-driven clippers. The body is then washed to get rid of dirt and such like, and finally the animal enters a swimming bath containing an agent which kills the parasite.

The bath may strike you as a difficult measure to adopt, but it is far otherwise. A bath is made by digging a narrow trench to a certain depth, rendering its sides and bottom water-tight with cement, and arranging it so that the animals enter at one end, are completely immersed, and swim the length of the bath to the outlet, which is provided with a ramp, up which they walk to a dripping pen. Here the surplus material is removed, and the patients walk about until dry. Two, three or more such baths may be needed to ensure cure, for though the insects may be killed, the eggs they lay are very resistent, and will hatch out later and re-infect the host. We know that a few days suffices for the hatching out, so that the bath is repeated until the skin is no longer itchy, and the new coat on the bare surface is seen to be growing.

The bath is not the only method employed in treating cases of mange; sulphur fumigations are used, and the French authorities have largely adopted this method. It requires the construction of special stabling, for the animals must be so placed that they do not breathe the gas. The head of each projects from the fumigating chamber, and a padding around the head prevents the leakage of gas. The whole surface of the body is exposed to the fumigation for half an hour.

Vapour baths are also employed, not only with the object of getting the animal's body clean, but also to facilitate the penetration of the subsequent dressing. Incidentally it may be mentioned that the boiler furnishing the vapour bath also supplies steam to the swimming bath, so that in winter the animals enter warm instead of cold water.

We have previously seen the system of grouping mange cases according to their nature and severity; they are also grouped in the ward according to the progress of the case. Beginning at the bottom of the stable, they gradually work up as they improve, until they remain fourteen days under observation, any showing signs of itchiness being sent back for further treatment. Those showing no further signs of being itchy are drafted to the discharge section of the hospital, where they remain under further observation until considered safe for issue. During the whole time they are under treatment the patients are liberally fed, without which recovery would be greatly delayed; they are also exercised daily on the automatic system.

Mange is the chief animal plague of active service; it was not always so. Glanders at one time held the predominant position, but applied science has reduced the ravages of this disease to almost a negligible quantity, and we are no longer haunted by its existence and persistent spread. Far otherwise with mange, we do not know the life-history of the insect when it is apart from the host. We know how the disease spreads, and that in three months a pair of insects can give rise to one and a half million descendants, but we do not know how it is that animals sent into the field, absolutely free from mange and never during their service having been in contact with the disease, may contract it under the conditions of war. The same remarks apply to lice, both in animals and man. No amount of dirt by itself can lead to the production of a living insect, or any other living matter; life can only spring from pre-existing life.

I must, however, leave the subject of mange to conclude the account of veterinary hospitals.

The public conception of these would probably be represented by groups of tumble-down buildings, reposing in winter in a sea of mud, and surrounded by fœtid manure heaps, the sick being overcrowded in dark stuffy stables, unventilated and undrained, such as the majority of the working animals in civil life in this country have to endure. The real picture is very different, and is represented by well laid-out blocks of stabling, comfortable, ventilated and drained. There is no sign of a manure heap, for in this place the highest degree of sanitation is observed. Well made roads intersect the buildings, grass lawns exist between the blocks, flower gardens are encouraged,

the whole place bearing the impression of comfort and civilisation. These hospitals are the pink of neatness and scrupulous cleanliness, or order, system and method. The watering and feeding arrangements are as perfect as modern science can render them, the whole of the food being prepared by machinery. A system of competition and healthy rivalry is encouraged between the various hospitals to ensure that the highest possible standard is obtained. There are always original and progressive men to be found in every large community, and specially selected veterinary officers are placed in command of our hospitals with a free hand to improve, and never to think that finality has been reached. In one hospital in France the very chains which tie up the horses shine like silver; none of it is hand labour; the chains go into a rotating vessel every day and polish themselves, and the motive power which cuts the chaff and crushes the corn burnishes the chains. In another hospital advantage has been taken of a supply of marsh gas from a large disused manure-pit; pipes driven deeply down into the vegetable mass, and the gas led to the hospital, where it is lighted and boils the food for the sick without costing a penny for fuel. If the animals are so well looked after, you can imagine the care taken of the men, and the comfortable conditions under which they live. They have their flower and vegetable gardens, recreation-rooms and library, and at least one hospital has a band. Far better work is obtained from men when they are well cared for.

Wherever we look in the various theatres of war—France, Egypt, Salonica, Mesopotamia, or East or South-West Africa, the veterinary hospitals are on a sure foundation. They are modified to meet local conditions and requirements, also climatic needs, but the same principles are observed—system, organisation, and whole-hearted devotion being the watchwords.

The *Diseases and Injuries* of active service can only be very briefly dealt with. You will have gathered from the few remarks already made what a big subject it is, representing nearly the whole of animal inefficiency in war. A visit to a veterinary hospital in any theatre would reveal very few cases due to battle casualties, not for the reason that these do not occur, for the horse is a far larger target than a man, but such cases are usually dealt with on the field by destruction, only those being reserved for treatment which offer a prospect of complete recovery. Nothing short of complete recovery is of the least value where animals are concerned. In the matter of treatment, modern methods are adopted, and I may tell you that surgery has made many advances during the present war. Injuries and poisoning from gas attacks have been frequent, and it may be

known to you that horses in the front line wear gas-masks. I will show you presently on the screen the destructive effect of gas on the surface of the body; the pictures are unique, and the artist a non-commissioned officer in the Royal Army Veterinary Corps.

Of mange I have already told you sufficient, and you will be able to visualise the insects at work when I come to the lantern demonstration. Of the pest *Lice* I have not previously spoken, though full of human interest; men are more easily affected than horses, and in days long gone by the infestation in peace time of people of position was not regarded as disgraceful, whilst among the poor the presence of lice was looked upon not only as an indication of good health, but the wanderings of these disgusting parasites on the head gave early warning of a change in the weather. In the days of Queen Anne we have it left on record that hunger and lousiness were the two distempers which affected the soldier in war. The lice insect is not difficult to kill, but the egg is very resistent, and so causes repeated infection. *Ringworm*, another troublesome affection, is due to a vegetable fungus, of which I will show you a picture. *Glanders* you have already heard a little about, and a picture of the organism which produces this loathsome affection will be shown you. Perhaps I may here explain that the reason why this disease in any army has lost its terror is due to the advance of scientific knowledge.

A Russian veterinary surgeon discovered the fact that if the organism of glanders were grown in broth, and subsequently the whole mixture killed by prolonged heat and then filtered, that the filtrate, known as mallein, if injected into a normal animal produced no effect, whereas if the horse were glandered a painful swelling arose at the seat of inoculation. This constitutes the mallein test to which I have so frequently referred. It was the greatest veterinary discovery of the nineteenth century, for it has enabled us to detect the presence of the disease at a stage when the animal cannot communicate it to others, and in this way to obliterate the pestilence. It is sad to relate that the discoverer subsequently died from glanders contracted during his investigations.

Strangles is a highly infectious disease common among young horses, and exists to an extraordinary extent among the animals collected on mobilisation. Its cause is a very small organism only capable of being seen under a high power of the microscope. It was the most serious pest we had to deal with at the beginning of the war; and frequently leaves behind it permanent inefficiency.

Contagious *Pneumonia* of the horse has led to an enormous monetary loss. During the early months of the war an average of thirty deaths a week for several months were occurring in one hospital in

this country from this cause alone. The fat and young were the chief victims. Pneumonia is also the chief source of loss among animals on board ship. Horses are not the only victims of contagious pneumonia; cattle are affected, and our transport oxen employed in the African campaigns have suffered seriously from this disease.

This reference to German South-West and German East Africa suggests the desirability of mentioning the other animal plagues existing in that continent, which have been responsible for enormous losses among military animals.

No more terrible pest exists than *Cattle Plague*, which is capable of killing off nearly the whole stock of a country. It has been a serious trouble in German East Africa, military operations having spread it far and wide. Fortunately it is possible, by inoculation, to protect animals against the disease.

The ravages of the *Tsetse Fly* you may have heard of. The part played by the fly is that it is the carrier of the disease, which is due to a large and peculiar organism in the blood, of which I will show you a picture. The fly is a blood-sucker, inhabiting well-defined zones of country, through which no animals can pass without becoming infected. The disease simply sweeps away the animal population; nor are its ravages confined to animals: a fly of the same species inoculates man with sleeping sickness. There are no less than ten clearly defined animal plagues due to different species of this organism. All of these plagues are not found in Africa, one affects India, another South America, and no cure is known for any of them.

East Coast Fever is an African disease of cattle, slow in action, but capable of inflicting dreadful losses. It also is due to an organism in the blood, but one of very small size. The disease is transmitted wholly by the bite of an infected species of cattle tick, of which I will show you a picture, and you will also see on the screen how the ticks on animals are destroyed by arsenical baths.

The last African plague I will mention is commonly known as *Horse Sickness*. The organism which produces this is so minute that it has never been seen, and it readily passes through the pores of a porcelain filter. The disease is seasonal, and probably transmitted by a species of mosquito. It is a plague of terrible intensity; in a few hours hundreds of animals may succumb.

Less alarming than the African plagues I have mentioned, but still very serious, is *Anthrax*, a disease widely spread over the world, affecting almost all animals, including man, but especially horses and cattle. There have been heavy visitations of anthrax among our troops operating in Palestine.

There is a curious group of diseases which exhibits itself by *Ulcers*

on the limbs and surfaces of the body. Two members of the group are highly contagious; one is due to a peculiar vegetable organism circulating in the lymph vessels, of which I will show you a picture. Should a trace of the discharge from one of the many ulcers gain access to a wound in a healthy animal it sets up the disease. You can picture what it means if a case finds its way into the surgical section of a hospital. The affection lasts for months; it has given considerable trouble in Italy, but less in France, among our forces, though the French Army has suffered severely.

When large bodies of animals occupy the same camp for any length of time, especially in bad weather, the ground becomes foul to an extraordinary extent. This produces inflammation of the legs and parts above the hoof, the skin becomes gangrenous, and even the hoof may rot off. You will understand how difficult it is to combat such a condition, when military necessity demands that animals shall remain in a foul and contaminated locality; the disease can only be controlled by clean camping grounds and dry weather.

I must now make reference to the very large group of cases due to *Exhaustion*, the result of over-work. Fortunately there has been no insufficiency of food in the present campaign, owing to it being mainly a war of position, but when war is mobile it is impossible to carry bulky material like hay in anything like sufficient quantities, and grazing has to be resorted to if time permits. Even an abundance of food is no compensation for over-work and strain. The condition of the ground in France, and especially in Flanders, is common knowledge. Two and three teams of horses have had to be employed to do the work of one, and when animal labour has absolutely failed, the guns and wagons have had to be man-handled. Age is another potent factor in the production of exhaustion; an old horse may easily be killed by one day of over-work. The exhausted war horse is a pitiable sight; many never recover. A cold or wet night kills off scores. Nursing, rest, shelter, and proper diet are the only remedies, and I have given you a detailed account of how this is carried out in convalescent depots.

Saddle and Harness Galls are the bane of active service. It would require a special series of papers to give you any real insight into the many causes operating in their production, and it needs several years' experience to learn practically how they may be prevented. Saddles and collars which fit horses in good condition do not fit them when the parts become smaller through loss of flesh, nor will the most perfectly fitting saddle maintain a back free from injury when men have to remain mounted hour after hour. Under these conditions the skin actually dies through continuous pressure. I have briefly mentioned these two causes of sore back as giving you some notion of

the magnitude of the difficulties of prevention, but there are many other causes in operation which are theoretically preventable, though in practice not always attainable. It is a common error to compare the shoe of a horse to the boot of a man—they both protect the feet, but there the analogy ends. The saddle of the horse may aptly be compared to the boot: both must fit; neither must be too large nor too small; a wrinkle in the sock or knot in a lace may inflict considerable injury, for the reason that the boot must be free from all irregularities. You can picture what it means to a back when the saddle blanket wrinkles, or a cake of mud exists between it and the skin or the loose end of a strap finds its way under the saddle. Yet these may readily occur when the animals are saddled up in the dark. Such causes, however, cannot compare with the injury resulting from the arches of the saddle resting on the spine. The condition of back arising from this cause has to be seen to be realised.

I have yet to mention a serious disease among horses known as *Lock-jaw*. It is invariably the result of injury, and the chief seat of such injury is the foot. I cannot tell you how many thousands of animals in France have suffered from penetrating wounds of the feet due to nails picked up on the road. Fortunately, all such cases do not terminate in lock-jaw, but the inefficiency resulting from this class of injury has been so great that in France public notices have been erected urging that nails should not be thrown about. Many contrivances have been adapted to the feet, with more or less success, to prevent injury when a nail is trodden upon, and a form of electric road-sweeper has been devised which will pick up nails, on the principle of the magnet.

Lock-jaw frequently follows gun-shot wounds; especially has this been the case during the present campaign in France. The infection comes from the soil, particularly that which has been highly manured. An animal may be protected against this disease if a special antidote—prepared from the organism which produces the disease—be injected under the skin very early after the infliction of the injury, and tens of thousands of these doses have been given to horses during the present war.

A peculiar but well-known eruption on the tongue and mouth has proved at times a serious source of inefficiency during the campaign. The disease has a long name, which I will not inflict on you. A far more important matter is the extreme contagiousness of the disorder, and the great loss in "condition" which it occasions through the animal being unable to eat.

The last disease I shall refer to is a peculiar form of *Ophthalmia* affecting horses in France, which has resulted in very many cases of blindness. Towards the end of the campaign in South Africa the same

disease was present, and occasioned a vast amount of inefficiency. It is no new disorder; its great terror in the field is its incurability and the extraordinary number of animals affected.

I have made no mention of the commoner troubles which fill a veterinary hospital, such as lameness, foot injuries and diseases, kicks, diseases of the organs of digestion and such like, but have focussed your attention on the larger and more serious groups, in order to give you a notion of the class of disorder with which veterinary hospitals have to deal in war.

Side by side with improved methods of treating disease, there has been going on during the whole campaign inquiries into the nature of diseases, and the study of their prevention, diagnosis and treatment. There are *Bacteriological Laboratories* in each theatre of operations which have done valuable work. The subordinate staff of the laboratory in France are nearly all ladies. I trust that one outcome of the war will be the entry of ladies into the veterinary profession, for the smaller animals are especially suited to their care.

The whole of the mallein employed throughout the Service is made in an army veterinary laboratory, hundreds of thousands of doses being sent out in the course of a year.

I must say a few words regarding the *Equipment* used in the field. Every veterinary officer is provided with a chest, containing, medically and surgically, all that he could possibly require, and up to date in every respect. Most of the drugs are in tablet form, so that no weighing is required; and the instruments, bandages and dressings are of the most approved type. This officers' chest was the outcome of many years' experience and trial, and has proved a great success. When the officer is mounted he is provided with a leather wallet attached to the saddle, containing an emergency surgical outfit and drugs, all of the latter being hypodermic. Apart from the personal equipment of the veterinary officer, every unit has one or more chests containing dressings and emergency medicines, while the subordinate staff is furnished with a leather wallet containing simple remedies. Hospitals are provided with a complete medical and surgical outfit. I will show you these equipments on the screen.

Veterinary equipment is supplied in the field from an advanced depot of veterinary stores where all replenishments can be effected; the advanced depots are supplied from base depots, while the base depots are supplied from this country. These operations are on an immense scale, and it is gratifying to add that the supply of stores for overseas has never once failed.

I wish time had permitted me to tell you something of the revolution the Veterinary Service has effected in the *Transport of*

Animals by Sea. The horse is a bad sailor, but under skilled management the mortality has been reduced beyond belief. Some thousands of animals have been lost by enemy action at sea, and in this connection I cannot help referring to the captain of the s.s. "Canadian," who refused to leave his sinking vessel as he could not find his dog. He was last seen on the bridge standing at the salute!

I feel the responsibility I have incurred in attempting to present to you so large a subject within the limits of a single paper. I have had to discuss highly important questions in a few words, and through lack of time have omitted much I should have liked to say. I have only attempted to give a bird's-eye view of the subject, and trust I have succeeded in showing that the veterinary profession—"the Cinderella of science," as it has been aptly described—has done something during the present war to justify its existence.

THE NUTRITIVE VALUE OF "HAY SEEDS."

By R. F. LINTON, Lieut., R.A.V.C.
Central Veterinary Research Laboratory.

In a former issue of this journal (foot-note, July, 1918), the writer published a note on the dietetic value of hay-loft sweepings. The present communication concerns the potential food value of "hay seeds," when this material has been shaken from hay and gathered in the clean state. From the view-point of the hygienist there is a considerable difference between the two commodities, loft sweepings being a very dirty "food," requiring a deal of cleaning before it can be considered fit for feeding to horses. Chemical analysis of the sweepings showed that their food value is approximately equal to that of fair grade meadow hay. "Hay seeds," when gathered methodically from hay, should undoubtedly be as clean and wholesome a food as the hay itself. Since it is impossible to abstract from any substance more than is in it, a knowledge of the chemical composition of this food is obviously desirable.

"Hay seeds," consisting of immature seeds, weed seeds, clover heads, and fragments of stems and leaves, together with hay dust, are shaken out from the hay:—(1) during trussing at the stack; (2) during transit of trusses to depots (*a*) in wagons and carts, and (*b*) in sheds at depots; (3) during chaff cutting at depots; and (4) while handling hay at stables.

Loss at stack. A large quantity of hay seeds is lost during the process of trussing at the stack, especially when steam trussers are used. Attempts have been made, at least by one officer, to save the material by spreading sheets to

catch it. Such efforts have, apparently, not met with success, most of the seed being trodden underfoot and lost. If worth serious consideration no doubt it might be saved.

Loss during transit.—Following the carriage of trusses by rail, a certain amount of the "seed" is always to be found in the wagons and in the storage sheds at depots. The quantity so lost is not great, and in sheds it rapidly becomes fouled. If in sufficient quantity to warrant the labour expended, which is doubtful, the "seed" should be swept up daily in order to recover it in a useful condition.

Chaff-cutting depots.—During the chaffing of hay and straw two "by-products" result: (*a*) "hay seeds" and fine chaff, and (*b*) dust. It is an economic custom to add the "seeds" to the cut chaff, thus no wastage occurs. The dust is sold to cattle feeders, who, it is understood, have formed a favourable opinion of its nutritive value.

The quantity of "seeds" and dust produced at a chaffing depot is variable, depending upon the nature of the hay cut and the proportion of straw added. Lieut. Barnes, A.S.C., O.C. Chaffing Depot, Aldershot, to whom the writer is indebted for much courtesy, gives the following approximate estimation: From 25 tons of forage, containing 75 per cent. of hay and 25 per cent. of straw, there is obtained one ton of dust and half a ton of "seed."

"*Seed*" *obtained from hay at stables.*—During the distribution of hay from the truss to individual horses, the "seed" gets scattered and lost. Similarly, loss occurs from hay nets and racks. It has been found that rye grass hay, or rye grass and clover yields, when well shaken, an average of 15 per cent. of "seeds." From average meadow hay there is very little in comparison: one truss of 140 lb. yielded only 3·4 per cent.

For the purpose of analysis, a mixed sample of the material was taken from rye grass, clover and meadow hay.

The writer's colleague, Lieut. Linzell, reports that he found it to have the following composition:—

Moisture.	Crude Protein.	Pure Protein.	Fat.	Carbo-Hydrate.	Fibre.	Ash.
14·25	10·5	7·75	3·0	25·75	36·5	10·0

The percentage of protein is higher than that found in pure rye grass mature seeds, due, probably, to the presence in the sample of clover heads. The percentage of fibre is very high, and in order to remove any doubt as to accuracy five estimations were made.

Calculation of the static and dynamic values of this material is, as stated in a former report, somewhat speculative.

The co-efficients of digestibility of medium meadow hay are again used; should an error exist here, it will give the material a value slightly too high, certainly not too low.

For the estimation of dynamic value, it does not seem justifiable to presume a greater availability than 60 per cent., owing to the high fibre content. This is probably a general allowance.

The values in kil-calories per pound, and the starch equivalent per hundred pounds of "hay seeds," loft sweepings and meadow hay are as follows:—

	Calories per lb.		Production Starch Equivalent.
	Static	Dynamic	
Meadow Hay ..	769	513	30
"Hay Seeds"..	649	376	22
Loft Sweepings	700	427	25

The theoretical value ascribed to loft sweepings is, as stated previously, undoubtedly an inflated one.

Analysis of "hay seeds" shows that this is not a valuable food, even when gathered under most favourable conditions.

One may assume that it is approximately equivalent for general nutritive purposes to poor grade meadow hay.

Dust from "hay seeds" and hay.—A point of importance is the proportion of mineral matter in the dust obtained from chaffing depots and from "hay seeds" (not loft sweepings). Of the dust obtained from the local depot, 200 grams were passed through sieves finishing at 30 mesh linear. This yielded 152 grams, or 76 per cent. of fine dust, which had an ash content of 13·68 per cent.

Of 200 grams of dust obtained from mixed "hay seeds" and passed through the same sieves, 23 grams, or 11·5 per cent., was fine dust containing 19·4 per cent. of ash.

From this it may be concluded that the dust from chaffing machines where moderately clean hay is cut is chiefly composed of vegetable matter.

NOTES BY DIRECTOR-GENERAL, ARMY VETERINARY SERVICES.

While these investigations point to the dietetic value of so-called "hay seeds" having, in more recent years, become exaggerated, the fact should not be overlooked that this material has a certain feeding value, and consequently every endeavour should be made to prevent it being wasted.

It has been contended that "hay seeds" contain aromatic principles which promote nutrition by stimulating the digestive processes. The point has received very careful consideration, and

it has been found that there is no evidence to confirm this assumption, either when the material has been used in the form of "tea" or in its natural state.

CLINICAL CASES

By F. T. HARVEY, F.R.C.V.S.,
St. Columb.

A CLINICAL COMPLEX—RELAPSE IN MILK FEVER.

A CROSS-BRED Guernsey cow, due for her fifth calving, was seen by her attendant at 3 p.m. on June 10th, apparently well, but, as her udder was very distended, he drew off some of the contents to relieve pressure. At 5 p.m. the cow was staggering about, being obviously affected with milk fever, and shortly after she rolled into a deep ditch. We saw her at 7 p.m., by which time she was quite comatose. The usual treatment was carried out, a tent being fixed and her comfort attended to generally.

June 11th, 9 *a.m.*—Cow better, but not standing. Drank some water and seemed inclined for food. Later in the day, however, she relapsed, and when we saw her again at 6 p.m. she was quite comatose, and in a very critical condition. The udder was inflated and stimulants administered hypodermically and by tube direct into the rumen.

June 12th, 10 *a.m.*—Better, but still recumbent. At 4 p.m. labour pains began, and on examination two hours later it was found that a torsion of the uterus was present.

Fortunately, the patient now stood, and it was then seen that the left hind leg was more or less powerless and knuckling over at the fetlock, but with help she was got through an opening and reached the level of the field. The cow was then rolled, and the torsion after a couple of sharp turns disappeared. The os was only slightly dilated, just admitting the fingers sufficiently to feel the nose of the calf. With the help of a splint and other assistance the cow hobbled indoors and was given a few hours' quiet. At 10 p.m., as no progress was being made, gradual dilation of the os was attempted, and this was more or less successful after a time, but the feet were not presented and were reached with great difficulty. After about two hours' work the calf came through, a good deal of force being necessary to effect delivery. Subsequently the membranes were retained, and there was some amount of sepsis in the uterus with vaginal swelling.

June 14th.—There was inflammation in one quarter of the udder, and a great deal of cough and disturbance of breathing, with fever.

June 21st.—The mammitis and bronchial catarrh both consider-

ably improved, leg bettering, and the general condition good. The case is remarkable on account of the variety of clinical conditions met with in a comparatively brief illness. Summarised, they are as follows :—

(1) Milk fever with relapse.
(2) Loss of power in limb.
(3) Torsion of uterus.
(4) Delayed birth and uterine inertia.
(5) Fœtal dystokia.
(6) Retention of membranes.
(7) Mammitis.
(8) Bronchial catarrh.

The torsion was quite easily reduced, and we attribute this to the fact that it was of recent origin, having probably occurred when the cow rolled into the ditch about forty-eight hours before. The loss of power in the limb following milk fever is not often seen at present, though common enough in earlier days. Regarding relapse, or recurrence of the symptoms of so-called milk fever in a given case after apparent recovery, it would be interesting if any symptoms or signs could be enumerated, enabling one to anticipate the event.

There is nothing more disappointing than to see a cow apparently through an attack of milk fever, and then to be called back a few hours later to find her dead or dying.

We recently saw a cow down with milk fever and the attack a severe one. In this case, one quarter of the udder had given no milk for three years, the milk duct being occluded. At each calving, this quarter would undergo the usual changes incidental to lactation, followed by involution and absorption of secreted materials.

In treatment, three-quarters only were dealt with, the occluded duct being left alone. On the following morning the owner reported the cow to be quite well, but some hours later (3 p.m.) she was again reeling, and at 5 p.m. was dead. What was the influence of the occluded quarter on the course of the disease ?

Some time since we treated a cow with milk fever, and on the following morning the owner 'phoned through saying the cow was well, and that it was unnecessary to see her again. Three hours later he went to the byre and found the patient dead.

A post-mortem examination revealed the fact that the cow had on a previous date suffered from a rather severe infestation with the liver fluke. She was in fine condition, however, at the time of her death.

Amongst other points, there are three to which we attach special importance in estimating the probability of a relapse in milk fever :—

(1) The eye. There is a lack of brightness in the expression, and the animal seems more or less indifferent to the surroundings.

(2) A curious up and down movement of the flanks in respiration. It is one of the earliest indications of an approaching attack of milk fever; it does not seem to be associated with any distress in breathing, and is probably due to some disturbance in connection with the vagus nerve.

(3) Inefficient action of the excretory organs, urinary and intestinal. We have seen it stated that it is unnecessary and irrational to give medicines in cases of milk fever, but a free action of the bowels should always be obtained. It would seem good practice to pay a second visit to every case of milk fever, but it is a frequently omitted one.

GAS GANGRENE.

Subject.— A butcher's horse fourteen years old, and about fifteen hands high. The animal had not been quite fit for a month. On November 1st, swellings appeared on both flanks; they were fairly large, not painful, and two days later had disappeared. He lost weight, but did his regular work up to November 8th. On the following day (the 9th) the beast was obviously ill; the head was carried on one side and there was restlessness. At 2 p.m., a swelling was noticed on the right side of the neck, just behind the usual site of "poll evil." This increased during the day, as also did the pain. We saw the case at 12 p.m.

Symptoms.— Temperature 105·5. Frequent pulse and respirations. Animal very restless, extremities cold, little appetite, and constipation. There was marked tenderness along the neck, and the swelling was very like an inverted saucer, and very tense in the centre, but with boggy margins.

October 10th, 2 p.m.—Temperature 103 degs. The swelling had increased considerably, was very hard, and gave a drum-like sound on percussion. Gas was evidently present under pressure deep down in the tissues. A boggy swelling extended half-way down the neck. A careful search failed to show any wound. As the condition of the patient seemed to be getting worse, it was decided to use the knife.

A longitudinal incision was made through the skin and subcutaneous tissues; this gaped widely, the exposed parts presenting a parboiled appearance, and neither serum nor blood escaped, so great was the tension. On dividing the deep fascia, there was a rush of gas and bloody foam, and the muscle was seen to be gangrenous. With relief of tension the horse seemed to get easier,

but in a few hours the amount of serum coming from the wound was extraordinary, and the swelling extended in all directions, so that the clinical features became typical of those seen in malignant œdema following a wound. The patient was shot at 3 p.m. on November 11th.

Bacteriological note.—Mr. Henning, Royal Veterinary College, Dublin, examined a swab from the above case and reported the presence in great numbers of a bacillus a little smaller than that of black quarter, and Gram positive; and also other organisms. On cultivation, after exposure to a temperature of 80 degs. Cent., gas was formed in considerable quantities.

Remarks.—The occurrence of gas gangrene in the horse, apart from a wound, seems to be exceedingly rare. In the *Veterinary News* for March, 1914, we recorded some cases of the kind seen in cattle, and also one in a colt, in which gangrene occurred in the muscles of the back subsequent to an operation for the removal of a schirrous cord. In the latter instance there was probably a metastasis, and in one of the cattle cases an old necrotic condition of the liver was found on post-mortem examination. We were unable to arrange for a post-mortem in the case above recorded, but the history as given would appear to suggest the probable existence of a septic centre somewhere in the body, containing anærobes, then infecting the blood, inducing gas gangrene of the poll. The clinical characters of an open and a closed gaseous cellulitis are very distinctive. The former occurs in connection with a wound; the gas penetrates the cellular tissue in advance of the cellulitis, and the disease extends in all directions, and soon there is profound toxæmia. Gas may be formed in very small quantities in an open gangrene, especially when involving parts containing little muscle. Taylor and Wallace assert that in man gas gangrene always begins in muscles, though it can subsequently spread anywhere. The bacillus of Welch (B. perfringens) is the commonest gas-producing anærobe, and it is said to be present in the majority of infected wounds, and that it is either rapidly eliminated from them or it settles down to a purely pyogenic or even saprophytic life. It is able to survive at least four weeks in a wound, but if gangrene occurs, it usually takes place early, that is, within a few days of the infliction of the wound. Its prompt recognition is of the utmost importance, and it may be mistaken for air pumped in through the wound. If gas-producing organisms are present, the bubbles of gas will escape with the discharge and an odour will be present. We once saw this mistake made in treating a wound near the elbow, the horse dying two days later from gangrene. All forms of gangrene appear to be more serious in the horse than in the other domesticated animals, but even in wounds in horses

the starting of a pathogenic growth of a gas-producing organism seems to be a matter of some difficulty, judging from the filthy conditions in which many horses are stabled when suffering from open wounds, because it is certain that anærobes must be continually gaining access to the latter.

Closed or metastatic gas gangrene is quite a different matter clinically from the above. Here the gas is developed in muscle infected by the blood stream. Bruising of tissue would seem to be an important element in determining the arrest and growth of the organisms in particular muscles or groups of muscles, for experiment has shown that if organisms freshly isolated from a human case of gas gangrene were injected intramuscularly into rabbits, no spreading gas gangrene followed unless the muscle was first extensively injured, or blood clot was produced. A noteworthy feature of these cases, especially in cattle, in our experience, has been the tendency to the limitation of the gangrene, the fibrous covering of the muscles apparently holding the process in check; the affected muscles are rapidly destroyed, the muscle sugar is split up, and gas is formed in sufficient volume to exert great pressure. Moreover, the muscles involved have always been those lying close to the vertebral column. These characters serve to differentiate the condition from black quarter.

It appears that anærobes growing under the conditions indicated soon lose much of their virulence, and rapidly have to give way to pyogenic organisms which then take the field. These latter, if the patient survives, form a suppurating zone around the necrosed mass, which is ultimately thrown off. This is of great importance surgically, as it indicates that in horses, at any rate, one should if possible delay using the knife until there is some evidence of pointing or liquefaction of tissue, lest by making a wound we convert the case into one of an open gangrene with rapid spread in all directions, as happened in the above instance. Three or four days should be allowed, if possible.

The chief characteristics of closed gas gangrene in the cases we have met with are:—

(1) The sudden onset.
(2) The large but well-defined swellings.
(3) The tension under which the gas has been confined.
(4) The large amount of necrosed tissue ultimately thrown off.

SUBMAXILLARY CELLULITIS IN CATTLE.

Case.—Devon cow about six years old was found separated from her companions one evening in September last. She shivered, refused food, and much saliva came from the mouth. There was

an enlargement in the submaxillary space, the owner saw swellings on both sides of the tongue and thinking it a case of "head fla," he incised them. We saw the animal the following day about 12 a.m. Temperature 106·5. There was much swelling in the submaxillary space; it extended towards the ear and around the angle of the jaw on the right side, and was beginning to travel down the channel of the neck. The parts were painful, and on palpation and percussion a peculiar sound was elicited, due to the fluid and broken-down condition of tissues. No emphysema was present. On inspecting the mouth, the parts around the root of the tongue and in front of the frœnum were much swollen and angry looking. The fourth right lower molar was absent, and the opposite tooth in the upper jaw had become so long that it bore on the gum in the bottom of the hollow when the mouth was closed. There did not, however, appear to be any discharge from this part. Having some doubt as to the best point for incision, we decided to wait before using the knife, so expectant treatment was carried out. On the following day the swelling had reached the lower third of the neck, and was travelling around towards the left side. The splashing sound could be obtained half way down the neck and the jugular was raised There was obviously a deep cellulitis present. Temperature 104 degs. Notwithstanding the increase of the swelling, the animal seemed rather better and had taken a little food; the condition of the mouth had also improved.

Three deep incisions were made in front of the channel of the neck on the right side, and from the lower part of the upper third of the neck a good deal of greyish-looking, foul-smelling pus was obtained. There was no proper abscess cavity, but an extreme breaking down and liquefaction of tissue, following a very virulent invasion of pathogenic organisms. The evacuation of pus was soon followed by improvement. An abscess and separation of some necrosed tissue subsequently followed, the tooth was shortened, and the cow made a good recovery.

Remarks.—The above is typical of a form of cellulitis occasionally seen in cattle; we have perhaps come across five or six such cases, occurring mostly in adult animals. There has always been the same rapid spread down the channel of the neck, and infiltration of the tissue with foul-smelling, greyish-looking pus. Extension is most rapid along the length of the muscles, and may travel from the angle of the jaw to the sternum in a few hours. Each case has improved following free incision and drainage. Later, one or more abscesses usually form, and necrosed tissues are thus thrown out. Gas formation is not a characteristic feature. The infection, however,

is a very virulent one, the normal defensive powers of the tissue apparently offering very little resistance to the growth of the organisms until efficient drainage is established. We took a swab from the above case and sent it to Mr. M. W. Henning, Royal Veterinary College, Dublin. In addition to the usual pyogenic cocci, a Gram negative bacillus was isolated, and this latter Professor Craig regarded as the probable cause of the putrefaction and bad smell. In the special forms of cellulitis occurring in man, one bears a very striking clinical resemblance to that which we have described above. It is called Angina Ludovici, or Ludwig's Angina. It is stated by Rose and Carless as being usually secondary to some buccal focus. Streptococci, Staphylococci and other organisms may be found. It runs a rapid course in man, and demands prompt surgical treatment.

Translation.

DEPRAVITIES OF TASTE IN TROOP HORSES.

By Veterinary Assistant Major V. ROBIN,
Of the Toulouse Veterinary School.

(*Concluded from page* 35.)

Pathological Consequences.—The absorption of material thus met with haphazard at camping places cannot be quite harmless. Without doubt, numerous subjects can give themselves up to these fanciful tastes without any clearly-defined troubles arising; however, certain foreign substances cause, and suddenly, too, accidents which collectively are of great seriousness.

Acute Enteritis—I.—As a result of the intensive eating of coal by horses of the artillery, about four subjects showed clinical manifestations which may be summarised asfollows: General dulness, almost, total loss of appetite, dryness of mouth, stiffness of the loins, and always a quite distinct blackish diarrhœa; as for the dung, it was soft, and had the appearance (colour and consistence) of cow dung, sometimes the material voided was quite liquid, and covered the fetlocks and perineum with a blackish coating.

This diarrhœic enteritis declined progressively during a period of eight days following the changing of the bivouac place. Cure was marked concurrently with the decline of general symptoms, by progressive clearing up of the colour of the fœces and by a return to their normal consistency.

II.—In like circumstances, symptoms in some ten subjects consisted chiefly of colic of a moderate kind, characterised by a deep prostration; the sick animal disliked standing up, and lay down continuously with the head obstinately turned to the flank. Death occurred in two cases within six to eight hours.

III.—One knows that the ingestion of sand causes severe colic, which the greater number of authors attribute to surcharge and obstruction. It seems to me that frequently this is not the case. My sick horses have not at any moment presented clinical symptoms so characteristic of obstruction. The autopsies have never allowed me to obtain from the intestines more than two to five pounds of sand distributed all through the alimentary mass. On the contrary, the digestive mucosa has constantly slowed marked alterations, such as scratches, longitudinal streaks, extensive excoriations, and intense, diffuse congestion. One has the impression that this mucosa has been punctured, scratched and rasped by alimentary sand acting after the manner of sand-paper. The colics seen are those of an acute traumatic enteritis, sometimes excessively violent. True obstruction is quite exceptional; as for surcharge, it is rare and without doubt secondary. An ailing intestine is easily distended and paralysed by an alimentary mass of moderate volume, without the volume and weight of sand which it contains being incriminated.

The same data apply to coal colics, of which the clinical picture is almost identical, although it may be difficult to admit the liberation, under the action of the digestive juices, of hydrocarbons in a closed vessel (as it were); the carbon seems to bring about a true poisoning, denoted in the living animal by diarrhœa and at the autopsy by degeneration of the liver and hæmorrhagi nephritis.

Calcareous Obstructions.—The frequency of these accidents in troop horses is certainly associated with the use of wood mangers. Their frequency has already drawn the attention of some observers, notably Valade. During the year 1916 I gathered some ten enormous concretions from horses dead of obstruction. These balls were always situated at the time of their removal in the pelvic flexure of the double colon and chiefly at the origin of the floating colon. On section they showed a yellowish matter of slightly pasty consistency in the fresh state, friable after drying, similar to a coarse pasteboard that crumbles on sawing; this aspect makes one think that the concretions for the most part are made up of wood fibres and ground bark glued together

In a number of cases this etiological view appeared quite plain. From the first the hroses dead of calcareous obstructions had passed the greater part of the summer of 1915 in the forest; during winter they were stabled in the village, where consumption of wood was impossible; finally they were bivouacked in the forest again for two months of the spring of 1916. For the most part the balls showed a thin shell, smooth and resistant, covered almost completely by an irregular layer of felted material conspicuously higher. The construction of the calculus seemed to be accomplished at two periods, separated by an

interval long enough for the production of the covering. The different measures taken to avoid damage caused by trees and stables have had as a result cessation of colic due to concretions. I have not observed any of them since November, 1916.

BAD HABITS AND WHIMS.

The permanent sensation of hunger and the appeasing of it by taking up abnormal substances is followed on the one hand by chronic enteritis, frequently noticed and put down to other causes; and on the other hand by a progressive disorder of the intestinal nervous system. This perversion tends definitely to a series of bad habits which are favoured by a collective life. In one artillery group one may find the greatest variety of crib-biters imaginable, amounting to 1 in 7. One sees wind-sucking without any contact object. One finds subjects which perpetually lick their chain-pegs; others cover the necks of their neighbours with multiple small bites, which makes one suspect mange, or they get loose in the night and nibble the hair of the tail from a quiet companion; others are constantly rubbing the anterior face of their incisors on the cord of the bivouac.

Prophylaxis—I.—The most rational measure to take is naturally an increase in volume of the ration. The food added need not be nutritious; it suffices if it is harmless and has no tendency to remain long in the intestine. Hay and straw are the best ballast foods, but under actual conditions one cannot, as one knows, depend on them. On the other hand, it is often possible enough to distribute green forage gathered from uncultivated land at the front. This forage continues to be much appreciated long after flowering, and the organisation of its collection is too much neglected. In the same way plants which grow on the marshes and on the edge of rivers (with the exception of horse-tail) constitute a great help to the ration even when the nutritive value is only slight.

II.—Under present conditions the most urgent indication is to prevent the animals satisfying their irregular appetites.

The application of metallic muzzles during the intervals between meals is a costly measure, little practised, and not very useful; one always has to reckon on the carelessness of attendants and the cleverness with which numerous subjects get rid of the muzzle in the night. To preserve the stables it is necessary to cover all accessible parts with a network or sheeting of iron; a tar coating is insufficient, and messes up the animals' coats.

When the camping place is situated on a sandy ground, the best precaution to take is to make a ditch at the fore part of the horses, 30 centimetres deep and 1·50 metres wide, filled afterwards with vegetable earth or dung.

The precautions to take vary according to circumstances; but the essential fact, as I believe I have shown, is not to consider vitiations of appetite as simply a curiosity. These aberrations have always an effect on the health of the animals; and cases where they are followed certainly and quickly by accidents which may be fatal ought to be foreseen.—*Revue Generale Med. Vet.* G. M.

Personal.

CAPTAIN F. C. GILLARD, M.C.

CAPT. F. C. GILLARD, R.A.V.C., whose photograph we publish in this month's Journal, was before the war a well-known practitioner in the South of England, being in a very busy practice at Folkestone and also at Ashford, in Kent. No one in the profession is more keen on all questions of professional etiquette, and, although only a young man, his opinion was sought far and wide by a large *clientéle*, and also by his brother practitioners in the county of Kent. Surgery was always one of Capt. Gillard's hobbies, and his skill in operating for "gid" in sheep has become proverbial. Amongst his equine patients he has for many years numbered Mr. Walter Winans' finest trotters and show horses, and his skill in the treatment of canine patients has gained him the confidence of owners of many valuable dogs. That he should also succeed when he took up the art of war and joined the Army Veterinary Corps was only to be expected by all who know his coolness in time of difficulty, and the profession has to congratulate him on obtaining the Military Cross for bravery in the Field.

The *London Gazette* thus describes the plucky deed for which he was awarded the Military Cross:—

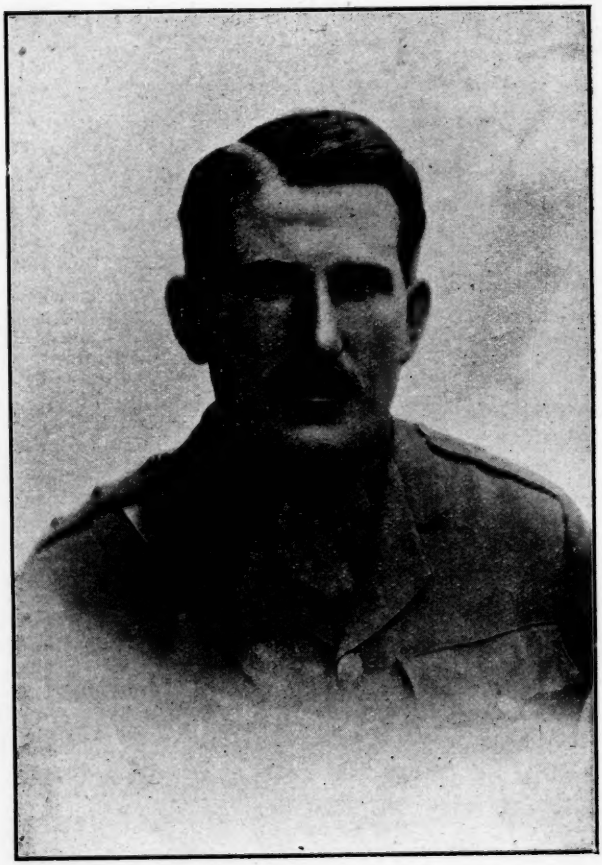
"Temp. Capt. F. C. GILLARD, R.A.V.C., when his horse lines were heavily bombed by hostile aircraft, rushed there and personally dressed every wounded animal, though at least fifty bombs dropped in or near the lines."

That he may live long to wear and enjoy it is the wish of all his numerous friends in the profession.

CAPT. M. F. O'SULLIVAN, M.C., S.R.

THIS War has given a chance for pluck and bravery and endurance to to be shown, and on looking through the list of honours gained for bravery in the Field, we find quite enough to prove that the veterinary officer has had his proportionate share of the dangers and has risen to the occasion well. Capt. M. F. O'Sullivan is, as his name indicates, an Irishman, and with the Irishman's disregard of danger he performed

CAPTAIN F. C. GILLARD, M.C., R.A.V.C.



CAPTAIN M. F. O'SULLIVAN, M.C.

an act which gained for him the coveted reward of the Military Cross. At the presentation ceremony, at which His Majesty himself pinned on the medal, the following was the description of the act in question :—

"Capt. M. F. O'SULLIVAN, A.V.C., S.R.—Seeing hostile shelling near neighbouring wagon lines, he rode over to assist, and in spite of heavy shelling got all horses to safety in the coolest manner. Next night he gave great assistance in getting all ammunition away from a dump under constant shell fire. On more than one occasion subsequently he volunteered for duties of a hazardous nature."

That he, too, may return safely is the universal wish of all who know him.

ARMY VETERINARY SERVICE.

War Office, Dec. 30.

THE following is a continuation of Sir D. Haig's Dispatch of 8th November, 1918, submitting names deserving of special mention :—

Maj. and Bt. Lt.-Col. (actg. Lt.-Col.) J. J. Aitken, D.S.O. ; Capt. D. Blyth (S.R.), attd. 8th D.A.C., R.F.A. ; Temp. Capt. F. L. Clunes, Comdg. 18th Vet. Evac. Stn. ; Temp. Qrmr. and Capt. C. Cooke, 9th Vet. Hosp. ; Hon. Lt. (temp. Maj.) H. A. Crowe ; Temp. Capt. L. A. Donovan ; Temp. Capt. J. Dunn ; Temp. Capt. A. Gofton, F.R.C.V.S., 19th Vet. Hosp. ; Capt. D. C. Greene ; Temp. Capt. R. W. Hadfield, 33rd Mob. Vet. Sec. ; Temp. Capt. J. E. Hanna, M.C. ; Temp. Capt. R. L. L. Hart (E. Afr. Vet. Corps.) ; Temp. Capt. J. Hill, attd. 38th Army Bde., R.F.A. ; Temp. Capt. S. Hirst, attd. 117th Bde., R.F.A. ; Capt. P. Howard (S.R.), Comdg. 15th Vet. Evac. Stn. ; Temp. Capt. C. A. Hutton, 1st Vet. Evac. Stn. ; Capt. J. J. G. Keppel (S.R.), attd. 29th Mob. Vet. Sec. ; Temp. Capt. J. MacFarlane, 49th Mob. Vet. Sec. ; Temp. Capt. C. G. Machonachie, M.C. ; Temp. Capt. H. E. McGee, Comdg. 23rd Mob. Vet. Sec. ; Temp. Capt. B. A. McGuire ; Temp. Capt. H. V. M. Metivier, 40th Mob. Vet. Sec. ; Temp. Capt. J. C. Miller ; Temp. Capt. H. K. Roberts ; Capt. C. J. C. Ryan, 13th Mob. Vet. Sec. ; T. Capt. A. R. Smythe, 31st Mob. Vet. Sec. ; Capt. P. S. Thierry, attd. 317th Bde. R.F.A. (T.F.) ; Capt. P. J. Turner, attd. 5th D.A.C., R.F.A. ; Temp. Capt. J. B. Walker ; Temp. Capt. J. H. Yates, 28th Mob. Vet. Sec.

R.A.V.C. (T.F.)

Capt. R. Bickerton, 2/1st N. Mid. Mob. Vet. Sec. ; Capt. A. C. Burton, 14th Vet. Hosp. ; Capt. D. R. Crabb, 2/1st W. Rid. Mob. Vet. Sec. ; Capt. (actg. Lt.-Col.) H. C. Jagger ; Capt. E. E. C. MacLachlan, 1/1st Low. Mob. Vet. Sec. ; Capt. J. Martin ; Capt. (actg. Lt.-Col.) J. McArthur, 14th Vet. Hosp. ; Capt. F. J. Richmond.

CANADIAN A.V.C.

Capt. N. Beaver, attd. 8th Can. Inf. Bde.; Capt. (actg. Maj.) S. C. Richards, Can. Vet. Hosp.; Capt. W. A. Robertson, attd. 12th Can. Inf. Bde.; Vet. Sgt. W. Kennedy, 320865.

AUSTRALIAN A.V.C.

Maj. T. H. Hankin; Capt. J. Legg, 3rd Mob. Vet. Sec.; Capt. W. S. T. Morgan, attd. 4th Aust. Div. Train.

THE ORDER OF ST. MICHAEL AND ST. GEORGE.

The King has been pleased to give directions for the following promotions in, and appointments to, the Most Distinguished Order of Saint Michael and Saint George, for services rendered in connection with military operations in France and Flanders. Date January 1, 1919:—

C.M.G.

* * * *

Maj.-Gen. J. Moore, C.B., F.R.C.V.S.

ORDER OF THE BRITISH EMPIRE.

The King has been pleased to give orders for the following promotions in, and appointments to, the Most Excellent Order of the British Empire, for valuable services rendered in connection with military operations in France and Flanders:—

O.B.E. (Military Division).

Capt. (actg. Maj.) W. Ascott (T.F.); Capt. (actg. Maj.) J. S. Bowden (T.F.); Temp. Lt. (temp. Maj.) H. A. Crowe; Maj. P. W. Dayer-Smith (T.F.); Capt. (actg. Maj.) R. A. Gooderidge; Temp. Capt. J. Hill; Capt. (actg. Maj.) S. E. Holmes (S.R.); Capt. (actg. Lt.-Col.) H. C. Jagger (T.F.); Capt. (actg. Lt.-Col.) J. McArthur (T.F.); Temp. Capt. B. A. McGuire; Maj. (temp. Lt.-Col.) A. W. Mason (retd. T.F.) Maj. W. W. R. Neale; Temp. Maj. (actg. Lt.-Col.) E. W. Parks (T.F.); Temp. Capt. J. B. Walker.

CANADIAN A.V.C.

Capt. (actg. Maj.) S. C. Richards; Capt. W. Robertson.

AUSTRALIAN A.V.C.

Maj. R. M. Hore.

PROMOTIONS AND OTHER REWARDS.

War Office, Jan. 1.

The King has been pleased to approve of the following rewards for distinguished service in connection with military operations in France and Flanders. Dated Jan. 1, 1919:—

TO BE BREVET MAJOR.

Capt. (actg. Maj.) F. B. Sneyd (S.R.); Capt. (temp. Maj.) W. H. Taylor.

THE MILITARY CROSS.

The King has been pleased to approve of the following awards for distinguished service in connection with military operations in France and Flanders. Dated Jan, 1, 1919 :—

Capt. R. J. Vickers, Can. A.V.C., 2nd. Can. M.V.S.

ORDER OF THE BRITISH EMPIRE.

The King has been pleased to give orders for the following appointments to the Most Excellent Order of the British Empire, for valuable services rendered in connection with military operations in various Fields (dated Jan. 1, 1919) :—

O.B.E. (Military Division).

Italy—Temp. Maj. T. Bone, M.C. ; Temp. Capt. D. Starkey ; Capt. (actg. Maj.) W. Stothert (T.F.).

C.B.E. (Military Division).

Egypt—Maj. (Temp. Col.) A. G. Todd, D.S.O.

O.B.E. (Military Division).

Capt. (actg. Maj.) V. A. Bartrum (T.F.) ; Capt. (actg. Lt.-Col.) W. J. Dale ; Bt. Maj. G. E. Tillyard ; Maj. (temp. Lt.-Col.) J. Kendall, Aust. A.V.C.

Salonika—Maj. W. L. Harrison, F.R.C.V.S. (T.F.) ; Temp. Capt. G. Moir.

MOST HONOURABLE ORDER OF THE BATH.

The King has been pleased to give directions for the following promotions in, and appointments to, the Most Honourable Order of the Bath, for valuable services rendered in connection with military operations in Salonika (dated Jan. 1, 1919) :—

C.B. (Military Division).

Col. (temp. Brig.-Gen.) Fitzpatrick Eassie, C.M.G., D.S.O.

PROMOTIONS AND OTHER REWARDS.

War Office, Jan. 1.

The King has been pleased to approve of the following rewards for distinguished service in connection with military operations in Egypt (dated Jan. 1, 1919) : –

THE MILITARY CROSS.

Egypt—Capt. G. C. Page, Aust. A.V.C., attd. 1st Sig. Sqdn., Aust. Engrs.

TO BE BREVET LIEUT.-COLONEL.

Salonika—Maj. (temp. Lt.-Col.) W. A. Jelbart.

TO BE BREVET MAJOR.

Capt. (actg. Maj.) C. A. Murray.

HOME SERVICES.

The King has been pleased to give orders for the following promotions, in and appointments to, the Most Honourable Order of the Bath, for services in connection with the War (dated Jan. 1, 1919):—

C.B. (Military Division).

Maj. and Bt. Lt.-Col. (actg. Lt.-Col.) Arthur Olver, C.M.G., F.R.C.V.S.

ORDER OF ST. MICHAEL AND ST. GEORGE.

C.M.G.

Maj. and Bt. Lt.-Col. (actg. Col.) Wm. Samuel Anthony; Maj. and Bt. Lt.-Col. John James Aitkin, D.S.O.; Capt. and Bt. Maj. (actg. Lt.-Col.) Alfred Searle Head, F.R.C.V.S., R. of O.

ORDER OF THE BRITISH EMPIRE.

The King has been pleased to give orders for the following promotions in, and appointments to, the Most Excellent Order of the British Empire, for valuable services rendered in connection with the War:—

M.B.E. (Military Division).

Temp. Qrmr. and Capt. C. Budd; Hon. Temp. Lieut. G. Hetherington; Temp. Qrmr. and Capt. R. Owen.

OFFICERS (Civil Division).

Lieut.-Col. Francis Dillon Hunt, Ahmednagar, Bombay.

PROMOTIONS AND OTHER REWARDS.

The King has been pleased to approve of the following rewards for valuable services rendered in connection with the War (dated Jan. 1, 1919):—

TO BE BREVET LIEUT.-COLONEL—Maj. G. C. O. Fowler, ret. pay (R.A.V.C.)

TO BE BREVET MAJOR—Capt. A. F. Castle, F.R.C.V.S. (T.F.); Capt. (temp. Maj.) J. Tagg (T.F.).

TO BE MAJOR—Qrmr. and Capt. T. E. Campey, M.B.E.

The King has been pleased to give orders for the following appointments for valuable services rendered in connection with military operations in North Russia (dated Jan. 1, 1919):—

O.B.E. (Military Division).

North Russia—Temp. Capt. (actg. Maj.) F. Chambers.

War Office, Jan. 6.

In a dispatch received by the Secretary of State for War from Gen. F. R., Earl of Cavan, K.P., K.C.B., M.V.O., Commander-in-Chief of the British Force in Italy, the following names of those officers

whom he considered deserving of special mention were submitted :— Capt. (actg. Maj.) T. J. Faithfull ; Maj. (temp. Lt.-Col.) H. S. Mosley, D.S.O. ; Capt. (actg. Maj.) W. Stothert (T.F.) ; Capt. (temp. Maj.) T. Bone, M.C. ; Temp. Capt. D. Starkey.

ORDER OF THE BRITISH EMPIRE.

The King has been pleased to give orders for the following appointments to the Most Excellent Order of the British Empire, for valuable services rendered in connection with military operations in various Fields (dated Jan. 1, 1919) :—

MEMBERS (Civil Division).

* * * *

John Ewing Johnston, Esq., Veterinary Officer in Charge, Remount Depot, Belfast.

THE MILITARY CROSS.

War Office, Jan. 11.

The King has been pleased to approve of the award of the Military Cross to the following in recognition of his gallantry and devotion to duty in the Field :—

Capt. L. E. L. TAYLOR, 3rd Mob. Vet. Sec., Can. A.V.C.—During an attack he, at great personal risk from shell fire, superintended the removal of all sick and wounded animals from the lines of his section to a more protected area. He was wounded while doing so, still he remained on duty, repeating his endeavours to scatter his animals, so as to lessen the risk of casualties. The result was that no casualties occurred within his unit, though a number of men and animals were killed and wounded in close proximity. A great deal of first-aid work was accomplished by him in the forward areas.

Correspondence.

To the Editor of THE VETERINARY JOURNAL.

DEAR SIR,—It is with the greatest regret that I have to advise the death, at the early age of 32, of Mr. W. R. O. Williams, M.R.C.V.S., of the Rhodesia Veterinary Staff.

Mr. Williams died on the 16th instant from pneumonia and heart failure resulting from an attack of Spanish influenza. He was a son of Prof. Owen Williams, Veterinary School, Liverpool University (who edited the VETERINARY JOURNAL from the end of 1900 to the beginning of 1905), and a grandson of Principal Williams, New Veterinary College, Edinburgh.

I enclose a cutting from the *Rhodesia Herald*, to which it is

unnecessary to add, except to say that he is a great loss to the profession and to Rhodesia.—Yours faithfully,

Chief Veterinary Surgeon's Office,
Salisbury,
21st November, 1918.

J. M. SINCLAIR,
Chief Veterinary Surgeon.

DEATH OF MR. ROWLAND WILLIAMS.

THE sad news was received in Salisbury (Rhodesia), on Saturday, of the death of Mr. Rowland Williams, M.R.C.V.S., at Gwelo Hospital. It will be recalled that Mr. Williams left Salisbury on October 31 for the purpose of inoculating railway employees on the Salisbury-Livingstone section of the B. and M. and Rhodesia Railways and was taken ill at Gwelo. For several days the news concerning Mr. Williams was to the effect that he was seriously ill, and doubts were entertained as to his recovery. It was hoped despite a message received in town that only the slightest hopes were entertained of his life, that owing to his robust constitution, he would have strength to resist the malady, but as stated, the dreadful news came to hand that he had passed away. The late Mr. Williams was the District Veterinary Surgeon, Salisbury, having joined the Department of Agriculture in December, 1910. He was a son of the late Prof. Owen Williams, of the Liverpool University, and grandson of Principal Williams, of New Veterinary College, Edinburgh. He was a brilliant member of his profession and was exceedingly popular, not only among his confrères, but also among the farming community; he never spared himself when engaged in the arduous work connected with his office. In Salisbury he was a well-known figure and won the esteem of all who knew him by many kindly acts and sound advice on all matters upon which he was consulted. When the recent epidemic broke out in Salisbury he was among the first to offer his services, and performed yeoman work at the Drill Hall in the first sad days. Afterwards he volunteered to assist in the humane work being undertaken by other devoted citizens at the lazaretto, and in company with the late Mr. Ferguson-Mackeown he knew no fatigue in his endeavours to alleviate the sufferings of the unfortunate natives striken with pneumonia. At the end of October, with an improved position at the lazaretto, he wllingly accepted the mission to tour the Salisbury-Livingstone section of the railways to inoculate the employees against the dread pneumonia. When he left Salisbury, he was not in the best of health, but with his usual bright and hopeful temperament ignored the signs concerning his own health, being only too ready to suffer himself if he could ensure the health of others. So he reached Gwelo, when he was taken ill and was obliged to enter hospital; but

succumbed. As was said of the late Mr. Mackeown, so it can be said of Mr. Williams—he laid down his life as the result of his unselfish devotion to the natives of Salisbury. With his passing, Salisbury is poorer, but the humane work he rendered will never be forgotten. Mr. Williams leaves a widow and two little children to mourn his loss. Mrs. Williams, we understand, was present when her husband passed away, having been called to Gwelo some days previously. We tender to the widow and her little ones, and to the deceased's mother, who is in Salisbury, as well as to the relatives generally, our heartfelt sympathy, and express the hope that they will gain some little consolation in their great trouble from the knowledge that he died from a malady contracted during his patient and devoted labours administering to the wants of others.

May he rest in peace.

Reviews.

THE LATEST LAUGH. A RED-TAPE SKIT. Published by Jarrolds, Ltd., London. Price 1s. 3d. net.

IT is said that the most destructive parasite to real life at present is the red-tape worm. If anybody wants a good laugh over its life-history they cannot do better than purchase this publication. It tells of the trouble that Mr. Jonas Rowbottom, of 17, Rosebud Cottages, Eddisforde, had with the pest in connection with some cow cake he wanted, but which owing to the activities of the worm he never got. We are shown the simple, expressive and plaintive letters Mr. Rowbottom wrote, and what a mine of official correspondence they aroused. If ridicule could kill the red-tape worm this document should do it effectively. One of the things that made us laugh most is the printed form sent to Mr. Rowbottom, to fill up when making his application. Here are some of the questions he has to answer:—(2) State whether you are Church of England or Protestant, or both. (3) Do you really want cow cake? What do you want it for? Do you keep cows? Where and how did you acquire them? Give full names and addresses. Give full description (colour of skin and eyes, length of tails and full Christian names). Question 17—put to test the applicant's general veracity runs, "Do you know that jolly game 'Think of a number'? Say whether you ever got it right at first shot." In its way the pamphlet deserves to rank with the books of Artemas as a classic pillorying the pretty ways of bureaucracy.

Mr. R.'s answer to the question "Why do you keep cattle?" is "to amuse the milkmaids." The whole aim of this pamphlet is to amuse, and yet it has a moral, and should effect the aim of "the gilder of the philosophic pill."

REPORT ON THE WORKING OF THE VETERINARY DEPARTMENT OF THE RANGOON MUNICIPALITY FOR THE YEAR 1917–1918.—British Burma Press, Rangoon.

MR. A. BLAKE, F.R.C.V.S., D.V.H., sends us this Report. It comprises seven pages, and deals with the varied activities under the supervision of the Veterinary Officer. Mr. Sedgwick, M.R.C.V.S., resigned his position in the Department in January, and every endeavour was made to obtain a qualified man to replace him, but without success. Mr. Lewis, G.M.V.C., was also irreplaceable. Although desperately short-handed, Mr. Blake has grappled manfully with the work, and much of it has been creditably done. Laws were drawn up for the slaughtering and skinning of animals, leading to the obtaining of more and better hides and the increase of that valuable commodity leather. Since 1910, glanders, which was very prevalent in Rangoon, has been stamped out by means of the use of mallein and slaughter of clinically affected subjects and reactors; 21 cases of anthrax were reported and 8 cases of rabies. The worst visitation of cattle plague for 25 years occurred. The disease followed the course of the wind. Inoculation, where permitted by the owners, produced good effects, but ignorant superstition caused a majority of refusals. The total of deaths was 972, and no laws as to isolation or restriction of movement could be enforced, but this defect has been remedied in the New Rangoon Municipal Act. The new slaughter houses made a good revenue—102,347 were slaughtered and 132,822 rupees obtained. The good work done with regard to a wholesome meat supply was shown by the rejection of 12,398 animals as being unfit for slaughter; 5,258 carcases were dealt with at the knackery—a great increase over former years, chiefly due to cattle plague. The municipal cartage is done by bullocks, over 1,500 being employed in removing various materials, rubbish, and night soil; 9,171 animals were impounded for trespassing. G. M.

NOTICES.

All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C.2. Telephone: Gerrard 4646. Telegrams: "Baillière-Rand, London."

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